Inguinal Bladder Hernia: Four Case Analyses

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A study of four cases presenting as inguinal bladder hernia was performed based on a review of the clinical presentation, circumstances of diagnostics, and surgical management. The mean age of patients was 66.5 years. Presenting symptoms included lower urinary tract symptoms (LUTS; three cases) and decrease in scrotal size after voiding (one case). The diagnostic circumstances were incidental finding during investigation for urethral stricture (one case), preoperative discovery on the basis of decrease in scrotal size after voiding (one case), perioperative discovery during standard herniorrhaphy (one case), and peritoneal effusion secondary to bladder injury in the early postoperative period. All patients were managed successfully by replacement of the bladder in its original position and inguinal herniorrhaphy, the Lichtenstein technique (two cases), Shouldice repair (one case), or modified Bassini repair (one case) through the same inguinal incision. For one patient, bladder injury was diagnosed at the time of inguinal herniorrhaphy and repair was promptly made. For another, bladder injury was discovered only at surgical abdominal exploration. Surgical repair led to the resolution of signs and urologic symptoms in all but one patient who needed medical therapy for residual LUTS. An awareness of this possibility on the part of general surgeons should guide preoperative evaluation and therapy appropriately. Even if the preoperative diagnosis is missed, a perioperative diagnosis is crucial to avoid bladder injury during surgery.

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KEY WORDS

Bladder • Inguinal hernia • Cystography • Herniorrhaphy • Complications

Described first by Levine in 1951 as *scrotal cystocele*, inguinal bladder hernia (IBH) is a rare clinical condition.[1] Since that time, despite several reports and advances in abdominal imaging, IBH remains a constant trap for the surgeon before the diagnosis, during herniorrhaphy, and even in the postoperative period. Actually, the bladder is involved in 1% to 4% of inguinal hernias in the general population and it may be as high as 10% in men older than age 50 years.[2] IBHs are difficult to diagnose: < 7% are diagnosed preoperatively and 16% are diagnosed postoperatively.[2,3] Thus, it presents several specific problems in its management and could be associated with possible dangerous surgical problems.[3] Unforeseen complications have been described with either the bladder or the ureter being accidentally damaged.[3-5] In this article, we present our experience with four cases of IBH; two of these patients presented with such complications.

Case 1

A 62-year-old man with a 15-year history of right inguinal swelling that was gradually increasing in size was referred to our department. The IBH was initially reducible, but was permanently incarcerated for the previous 2 months. His medical history included high blood pressure, obesity, atrial fibrillation, and recurrent urethral stricture treated with intermittent internal urethrotomy over the previous 6 years. The examination was remarkable for right inguinal hernia extending into the scrotum, which was the result of an old right inguinal hernia repair scar. A retrograde urethrocystography showed the patient's bladder herniating through the right inguinal canal (Figure 1). After right inguinal exploration, the herniated bladder was dissected and returned to its normal pelvic position. The inguinal hernia was repaired using the Lichtenstein technique. The urethral stricture was managed by internal urethrotomy. Postoperative course was uneventful and the patient was discharged on the second postoperative day. Thereafter, he was advised of regular self-calibration for his urethral stricture.

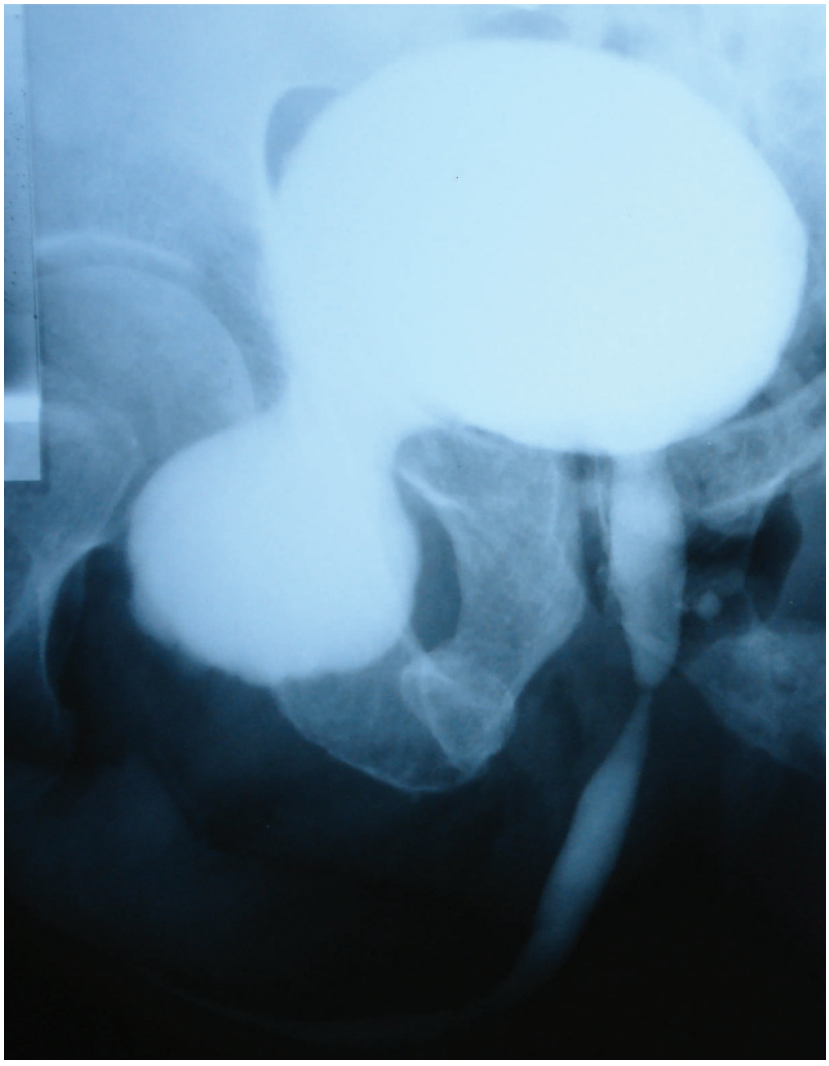

Figure 1. Cystogram showing the bladder of patient in Case 1 herniating through the right inguinal canal into the right hemiscrotum with ureteral stenosis.

Case 2

A 72-year-old man was referred to our department with a history of left inguinal swelling that was gradually increasing in size. The patient's clinical history disclosed diabetes mellitus and high blood pressure. This mass was painless and reducible. The patient reported that sometimes after voiding the inguinal hernia might reduce spontaneously. Occasionally, the patient had to squeeze his scrotum to complete urination. Ultrasound suspected a bladder herniation, and retrograde urethrocystography identified the displacement of a large portion of the bladder into the inguinal hernia (Figure 2). At the left inguinal exploration, the bladder was decompressed and relocated to its original position without complications. The inguinal hernia was repaired using a polypropylene mesh (Lichtenstein technique).

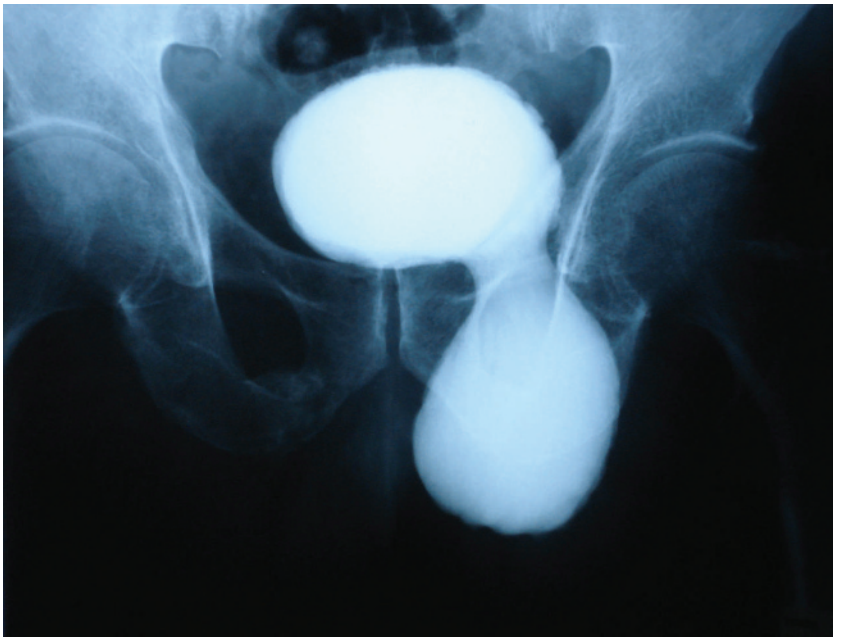

Figure 2. Retrograde cystography demonstrating left bladder herniation of patient in Case 2 into the inguinal canal with a large hernia ring.

The patient's postoperative course was uneventful. One month later, a reevaluation of the patient's symptoms after inguinal hernia repair showed total resolution of lower urinary tract symptoms (LUTS).

Case 3

A 69-year-old man presented to the surgical department with right inguinal swelling. He had a history of occasional constipation and LUTS. Physical examination revealed an inguinal hernia extending in the scrotum and an enlarged prostate. During surgical repair, injury of the bladder was suspected due to the presence of fluid into the operative field. Through the urethral catheter, the bladder was filled with sterile saline fluid and a blue dye (methylene blue), which exteriorized in the surgical field. After dissection of the bladder wall, the wound was sutured with a 2/0 polyglactin running suture. The hernia was repaired using a modified Shouldice technique. The patient had an uneventful discharge on postoperative day 2. The Foley catheter was removed the fifth postoperative day. Cystography performed 2 weeks later demonstrated a normal bladder. The patient had residual LUTS, which was managed with medical therapy (α_1-blockers).

Case 4

A 63-year-old man came to the outpatient general surgery department with a progressively enlarging swelling over his left inguinal region. He had LUTS and occasional urinary incontinence. On examination, he had a huge left-sided irreducible inguinal hernia. The penis and right testis were visible but the left testis could not be palpated. No further evaluation was performed. The patient underwent right inguinal repair using a modified Bassini technique with approximation of the conjoint tendon to the inguinal ligament. In the postoperative period, the patient presented with acute abdominal pain and he had not urinated. A Foley catheter was placed, and $<$ 100 mL of hematuric urine was recuperated. Ultrasound showed a peritoneal effusion estimated at 500 mL. An abdominal exploration was performed and showed a large bladder wound bleeding into the peritoneum. The bladder was closed using a 2/0 polyglactin running suture. The fluid in the peritoneal cavity was evacuated and a drain tube was inserted. The patient had an uneventful postoperative course and the drain tube was removed on the second postoperative day. On postoperative day 7, the patient was discharged. The patient remained clinically asymptomatic without voiding difficulty after surgery and recovered well. A year after the operation, his frequency of voiding was 4 to 6 times per day and once during the night. Bladder capacity became 300 mL.

Discussion

Bladder herniation occurs in an acquired direct inguinal hernia with the bladder pulled into the hernia, together with a sheath of peritoneum, which forms its sac. In most cases, IBH has been described in elderly patients. Some factors are associated with the pathophysiology of bladder herniation, such as chronic urinary obstruction, obesity, decreased bladder tone, and weakness of the pelvic musculature.[2-4] Because hernias attain a large size mainly because of neglect, other neglected comorbid conditions such as chronic obstructive pulmonary disease or benign prostrate hypertrophy (BPH) might also be present.

Most cases are asymptomatic and are usually found incidentally on radiographic imaging or at the time of herniorrhaphy due to the small intermittent nature of the hernia.[2,4] Almost all the patients related their symptoms to concomitant prostatic hypertrophy or cystitis. The clinical history should mention the presence of urinary symptoms, such as dysuria, urgency, and frequency of voiding.

Symptoms depend on the size and contents of the hernia. Advanced cases may be associated with two-stage urination in which the first stage is spontaneous and the second is facilitated by manual compression of the herniated bladder or a decrease in scrotal size after voiding.[5] Several authors reported improvement in urinary symptoms after hernia repair, which suggests that a large component of complaints are related to bladder hernia.[2,3,5] That is why, in the era of modern medical BPH therapy, many investigators recommend an evaluation of the urologic symptoms after herniorrhaphy.

Circumstances of discovery can vary from incidental findings to surgical emergencies such as incarceration or strangulation of the hernial sac contents.[4] IBH is often diagnosed during herniorrhaphy or identified after intraoperative injury, as in Case 3. In fact, in these cases, a 12% risk of injury has been reported.[4,5] This is the case for two of the patients in our series. A preoperative identification of the hernial content can avoid surgical bladder injuries and modify operative management of the inguinal hernia. This radiographic evaluation can be performed in patients aged >50 years, who are obese, have LUTS, or with a history of previous herniorrhaphies.[4,5]

The surgical repair can be performed ideally and safely with the use of mesh that decreases the risk of recurrence.[4,5] However, it's also possible to close the defect without the use of mesh graft, as was done for one of our patients, depending on the surgeon's choice, availability, and, above all, to local conditions (eg, bleeding, operation field contaminated by urine).

Radiographic imaging is not routinely performed in the workup of inguinal hernias, but cystography is the gold standard in diagnosis with the highest diagnostic value showing indentation of the bladder wall.[5,6] High-resolution ultrasound with 5-, 7.5-, or 10-MHz transducers allows better anatomic depiction and higher sensitivity for detection of scrotal abnormalities.[5-9] Computed tomography (CT) scan could be an important aid and could provide detailed information for the surgical planning.[6,10,11] Current multidetector CT allows for a very accurate and rapid evaluation of bladder (and ureter) herniation, even on unenhanced scans.[10] In our series, we did not use a CT scan because we had not suspected IBH, and retrograde cystography remains a simple test without potential harm to the patient and has a good diagnostic outcome.

Complications of IBH include vesicoureteric reflux, bladder rupture, hydronephrosis, and strangulation, which may result in ischemia and bladder infarction.[2-5] The vesicoureteral reflux can be secondary to chronically distended bladder or, rarely, to involvement of the ureter in the content sac.[7] Typically, the trigone is in a fixed position; thus, obstructive renal failure is rare, but it can occur with large bladder hernias. Laniewski and colleagues have reported a case with acute renal failure secondary to acute urinary obstruction.[12] Some cases of bladder cancer within the bladder hernias have been reported.[13,14] Usually, there are no associated complications; however, the possible development of strangulation should be kept in mind but this event is rare because the ring is large in this type of hernia.[4,15]

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In 2004, Oruç and colleagues found, in a review of 190 cases, that 11.2% of the hernias were associated with urologic malignancies, and 23.5% of these were associated with a variety of complications.[3] These complications can even be fatal, so it is important to confirm the IHB diagnosis before any surgical procedure.

Despite its retrospective uncontrolled design and small sample size, our study suggests that some recommendations can be made to avoid complications. As a first step, if there is any doubt, preoperative identification of bladder herniation should be confirmed by CT, especially for very high-risk patients such as men aged > 50 years, obese men with urologic symptoms or other causes of urinary output obstruction, or those with history of previous herniorrhaphies.[4,5] In these cases, abdominal imaging may be the first clue to the correct diagnosis. Second, a careful dissection of the visceral sac with clear identification of each anatomic element is advocated. Finally, it is preferable to abstain as much as possible from resection of hernia content, especially in obese patients where the subcutaneous fat and the intact external oblique aponeurosis can mask a small IBH.

The standard treatment of IBH is either reduction or resection of the herniated bladder followed by herniorrhaphy.[2,3,5] Most small asymptomatic bladder hernias are diagnosed at the time of inguinal herniorrhaphy. Therefore, they are most commonly repaired through

the same inguinal incision.[3] Bladder resection should be reserved only for cases with a bladder wall necrosis, a true herniated bladder diverticulum, a tight hernial neck, or a tumor in the herniated bladder.[5,13-15]

Conclusions

Preoperative identification of IBH is essential to prevent iatrogenic trauma or even severe complications. It is mandatory for general surgeons and urologists to be aware of this rare condition during the surgical repair of inguinal hernia. It is recommended that both a general surgeon and a urologist should manage complex cases. ■

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MAIN POINTS

- The standard treatment of inguinal bowel hernia (IBH) is either reduction or resection of the herniated bladder followed by herniorrhaphy. Most small asymptomatic bladder hernias are diagnosed at the time of inguinal herniorrhaphy and are most commonly repaired through the same inguinal incision.
- A preoperative identification of the hernial content can avoid surgical bladder injuries and modify operative management of the inguinal hernia. This radiographic evaluation can be performed in patients aged > 50 years, who are obese, have lower urinary tract symptoms, or with a history of previous herniorrhaphies.
- Bladder resection should be reserved only for cases with a bladder wall necrosis, a true herniated bladder diverticulum, a tight hernial neck, or a tumor in the herniated bladder.
- Preoperative identification of IBH is essential to prevent iatrogenic trauma or even severe complications. It is mandatory for general surgeons and urologists to be aware of this rare condition during the surgical repair of inguinal hernia. It is recommended that both a general surgeon and a urologist should manage complex cases.